

Continued Pteridophyte Invasion of Hawaii

KENNETH A. WILSON

Natural History Museum of Los Angeles County, 900 Exposition Boulevard,
Los Angeles, CA 90007

ABSTRACT.—Two new alien pteridophytes have become established in the Hawaiian Islands since 1996, bringing the total of naturalized alien ferns to 32. Also, established alien species continue to spread onto new islands.

Warren Herb Wagner, Jr. was the first to publish a comprehensive report of the pteridophytes naturalized in the Hawaiian Islands (Wagner, 1950). According to this publication, a total of 21 alien species had become established in the Hawaiian Islands. By 1996 an additional nine naturalized species had been discovered (Wilson, 1996). This paper reports on two newly discovered alien species that have become established, three new records documenting the spread of naturalized species into additional islands, a collection recording the earlier presence of a species than was previously known, and one revised identification of a widespread alien fern. The current status of naturalized ferns and fern allies in Hawaii is shown in Table 1. In the table the species are arranged by the date of their first collection in Hawaii, as determined by the earliest available herbarium collection.

***Azolla filiculoides* Lam.**—In 1943 Fosberg reported *Azolla filiculoides* to have become fully naturalized in taro patches and irrigation ditches on Oahu (Fosberg 1943), after having earlier been deliberately introduced into the Islands as part of a mosquito abatement program. Wagner (1950) reported having collected it on Oahu, as well as on Maui. In 1996, I reported the species to be found from flooded areas on all of the islands except Hawaii, although I speculated that it was also to be found there. A collection by Clyde Imada made in June 1999 from the island of Hawaii now documents its presence there, where he found it growing in a taro farm in Waipio Valley (Imada 99–16, BISH).

***Blechnum appendiculatum* Willd.**—The *Blechnum* species that grows in Hawaii has been known as *B. occidentale* L. since its occurrence was first reported. Recent studies, however, have shown that the rachises of *B. occidentale* are glabrous on the abaxial surface, whereas those of *B. appendiculatum* are pubescent and glandular. *Blechnum appendiculatum* also differs in having more pinnae and darker rhizome scales than does *B. occidentale* (A. R. Smith, pers. comm.; see also Hoshizaki & Moran, 2001, p. 216). The species naturalized in Hawaii is *B. appendiculatum* (syn. *B. glandulosum* Kaulf. ex Link). Both species are natives of tropical America.

***Lygodium japonicum* (Thunb.) Swartz**—A population of *Lygodium japonicum* has been known to be growing north of Hilo, where it was first col-